SAMPLE PROBLEMS

9. Deidra is 57 inches tall, and her little brother is 42 inches tall.

a. Deidra is how much taller than her little brother? _____

b. Fill in the correct numbers so that this equation describes the story.

_____ inches	–	_____ inches	=	_____ inches
Deidra's height		little brother's height		difference in their heights

(Notice that when we write an equation to describe a story, we put a short description under each quantity in the equation to explain what that quantity represents in the story. For example: Deidra's height, little brother's height, and difference in heights. And as always, we put labels on each number. In #9, all the numbers represent inches.)

10. Tom bought 4 bottles (all alike) of salad dressing. Altogether, the 4 bottles contained 36 fluid ounces of dressing.

a. How many fluid ounces were in each bottle? _____

b. Fill in the correct numbers so that this equation describes the story.

_____ bottles	×	_____ fluid ounces per bottle	=	_____ fluid ounces
bottles Tom bought		amount in each bottle		total amount

(Again notice that there is a label on each number in the equation: bottles, fluid ounces per bottle, and fluid ounces. And there are also descriptions under each quantity which explain what that quantity represents in this story: number of bottles Tom bought, amount in each bottle, and total amount.)

12. The combined areas of Louisiana and Mississippi are 90,480 square miles. Louisiana has an area of 43,566 square miles.

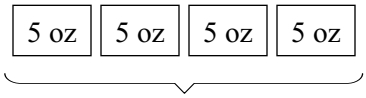
a. What is the area of Mississippi? _____

b. Write an equation which gives all of this information.

(Remember to put labels on all the numbers, and to write a short description under each quantity to explain what it represents.)

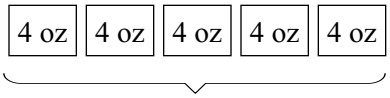
15. Think about these two situations:

Serena bought 4 packs of pecans with 5 ounces of nuts in each.



Total 20 oz.

Venus bought 5 packs of pecans with 4 ounces of nuts in each.



Total 20 oz.

a. Explain what is the <u>same</u> about the two examples, and what is <u>different</u> about them.

b. Write an addition equation to represent each example.
(Write an explanation under each quantity which tells what that quantity <u>means</u> in the story.)

c. Write a multiplication equation to represent each example.
(Be sure to put labels on all the numbers.)

16. In each equation, what number does *j* represent?

a. *j* packs × 5 sticks of gum per pack = 45 sticks of gum *j* represents _____

b. 8 cucumbers + *j* squash = 17 vegetables *j* represents _____

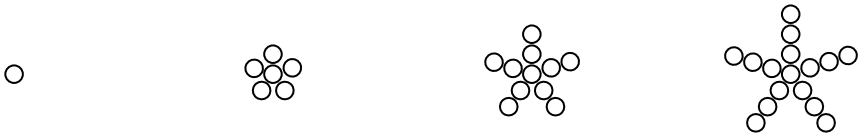
c. 120 heartbeats ÷ 2 minutes = *j* heartbeats per minute *j* represents _____

d. $\underbrace{20 \text{ points}}_{\text{scored in whole game}} - \underbrace{j \text{ points}}_{\text{scored in 1st half of game}} = \underbrace{13 \text{ points}}_{\text{scored in 2nd half of game}}$ *j* represents _____

e. 4 pounds of ham × \$3.50 per pound = \$*j* *j* represents _____

f. 150 calories ÷ *j* servings = 50 calories per serving *j* represents _____

21.



1. 2. 3. 4. 5.

a. Describe the pattern in pictures 1, 2, 3, and 4.

b. Draw picture 5 to continue the pattern.

c. Complete this sentence:
After the first picture, each picture contains _____ more circles than the picture before it.

d. How many circles would be in the 6th picture? _____

the 7th picture? _____

the 8th picture? _____

e. If this pattern were continued, "forever," is it possible that one of the pictures could contain 4,000 circles? _____ Explain how you got your answer.

24. Miss Elsa put her class into groups. There were 3 girls and 2 boys in each group. There are 12 boys in Miss Elsa's class.
How many girls are in the class?

_____

Hint: Fill in the matching numbers in the chart shown at right.

Number of girls	Number of boys	
3	2	(1 group)
	4	(2 groups)
	6	(3 groups)
	8	(4 groups)
	10	(5 groups)
	12	(6 groups)

27. A machine caps 9 bottles of Cola every 5 minutes.

a. How many bottles does the machine cap in 10 minutes? _____

in 15 minutes? _____

in 30 minutes? _____

b. The machine operates at a steady rate of _____ bottles per hour.

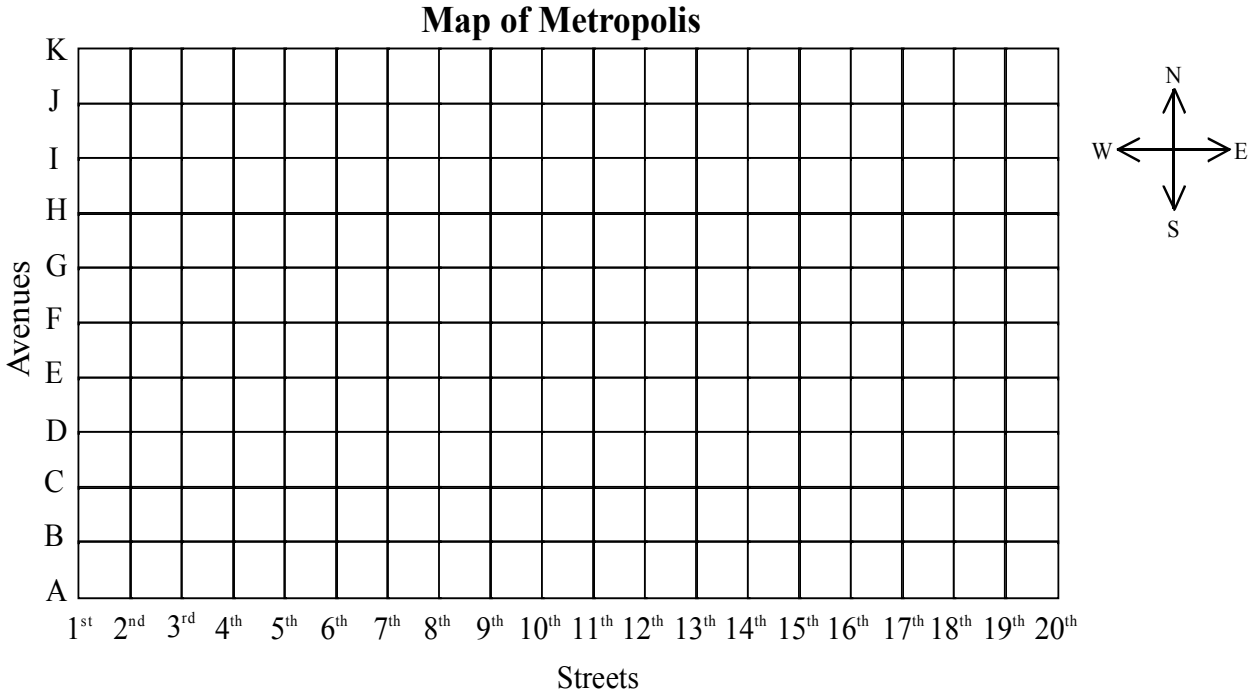
Yesterday the machine began operating at 9:40 a.m. It was turned off at Noon.

c. How long did the machine operate yesterday morning? _____

d. How many bottles of Cola did the machine cap during that time? _____

e. Show how you got your answer.

44.



a. Carla's house is at the corner of 15th Street and Avenue B. Put a dot on the map at this location. Label it "Carla's House".

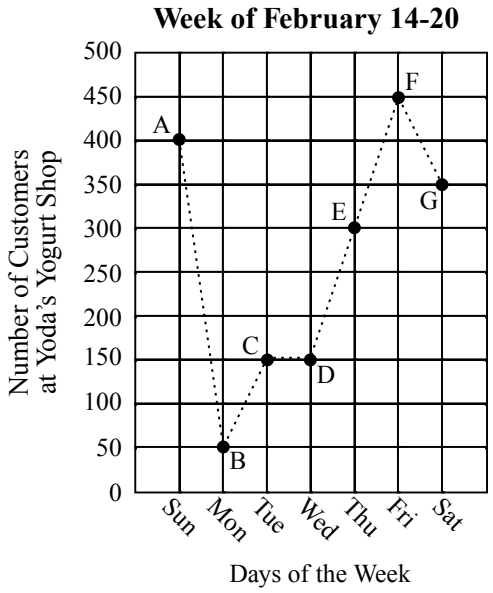
b. Carla leaves her house on her bike. She rides 6 blocks North, then 10 blocks West to get to McBurger's. Put a dot on the map to show where McBurger's is.

c. Fill in the location of McBurgers: at the corner of Avenue _____ and _____ Street.

<u>Explanation</u>:

Notice that the points on this graph are located in a grid, just as the points in the Map of Metropolis in #44.

The only difference between them is the <u>names</u> of the two sets of lines which form the grids.



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For the map, the two sets of lines are called Streets and Avenues. For the graph, they are called Days of the Week and Number of Customers. So each point on the map is at the intersection of a Street and an Avenue, and each point on the graph is at the intersection of a Day of the Week and a Number of Customers.

Examples:

i. Point C is at the intersection of Tuesday and 150 customers. This tells us that there were 150 customers at Yoda's on Tuesday.

ii. The location of Point F tells us that Yoda's had 450 customers on Friday.

45. Use the line graph about Yoda's Yogurt Shop to answer these questions:

a. Which point on the graph tells us how many customers came into the Yogurt Shop on Tuesday? _____

b. On which two days of the week represented in the graph did Yoda's have the same number of customers? _____ and _____

How many customers did the shop have on each of those days? _____

c. Did Yoda's have exactly 200 customers on any day of the week represented in the graph? _____

If so, which day was it? _____

d. Fill in this chart so that it gives the information shown in the graph.

Week of February 14-20

Days of the Week	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Number of Customers at Yoda's							
	Point A	Point B	Point C	Point D	Point E	Point F	Point G

Notice that each piece of information in the chart (how many customers Yoda's had on a particular day) corresponds to a point on the graph.

Explanation:

Suppose that all bags of Kelly Jelly Beans contain the same number of candies. But we don't know how many are in each bag. So we will call the number, j.

Now let's think about these questions:

i. How many candies are in several bags?

In 2 bags there are 2 times j candies. This is written as $2j$ candies.
In 3 bags there are 3 times j candies. ($3j$ candies)
In 4 bags there are 4 times j candies. ($4j$ candies)
etc.

Notice that whenever we use a letter to represent a number, and we want to write the product of that number times some other number, the multiplication sign is left out.

For example:

8 times q or q times 8 or $8 \times q$ or $q \times 8$
are all written as $\boxed{8q}$.

n times 3 or 3 times n or $3 \times n$ or $n \times 3$
are all written as $\boxed{3n}$.

So $\boxed{6k}$ means 6 times k or k times 6 or $k \times 6$ or $6 \times k$.

ii. Jane has 1 full bag of Kelly Jelly Beans and 3 jelly beans from another bag. How many candies does Jane have?

Answer: $\underbrace{j + 3}$ candies
(1 full bag; extras)

iii. Tim has 4 full bags of Kelly Jellys and 1 jelly bean from another bag. How many candies does Tim have?

Answer: $\underbrace{4j + 1}$ candies
(4 full bags; extra)

iv. There were 7 full bags of Kelly Jellys on Mrs. Green's table. Her son opened one of the bags and ate 4 candies. How many jelly beans were left on the table?

Answer: $7j - 4$ jelly beans

↑ 7 full bags ↑ eaten

v. Mike had 2 full bags of these candies and Lisa had 3 full bags.
How many candies did Mike and Lisa have altogether?

Answer: $2j + 3j$ candies

↑ candies Mike had ↑ candies Lisa had

Now notice that, together, Mike and Lisa had 5 full bags of jelly beans.
So this is also a correct answer:

$5j$ candies

vi. Which of these sentences are true?

$4j + 5j = 9j$

$j + 3j = 4j$

$26j + 11j = 37j$

Answer: All of them are true.